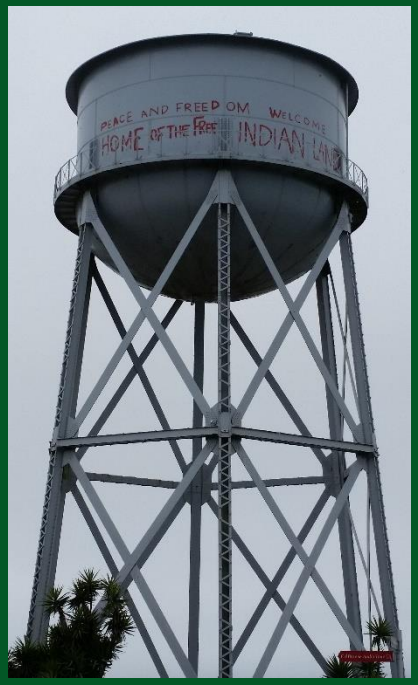
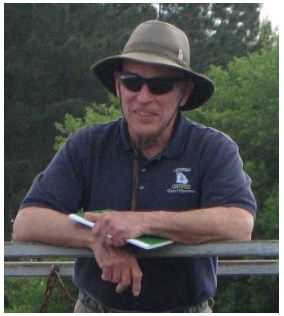
ADEM Operator Certification Update and Pending Reg Change





ADEM Annual Surface Water Meeting

October 22, 2019

Alabama State University

Jim Grassiano – Alabama Department of Environmental Management

Mary Alice Corcoran – Alabama Department of Environmental Management

The State of Operator Issues in Alabama

- Resurgence in the value of certification
- Operator Inventory
- Obtaining certification has become more challenging
- Exam pass rates
- Pending revised operator certification regulation

Utility Managers…

Water & Sewer Boards, Mayors, and Municipal Governance need to understand:

- **Just ‘anyone’ can’t become certified, particularly at higher grade levels**
- **Invest in/select good candidates**
- **Acknowledge their certification**

Operator Inventory (as of 9/8/19)

- Total Certified Water Operators: 2536
  - This total number consists of

	Est. No. of Systems (579 Total Systems)
• 780 Grade IV Water Operators	• 79
• 207 Grade III Water Operators	• 26
• 834 Grade II Water Operators	• 282
• 715 Grade I Water Operators	• 192

Operator Inventory (as of 9/8/19)

- Total Certified Wastewater Operators: 1572
  - This total number consists of
    - 593 Grade IV Wastewater Operators
    - 162 Grade III Wastewater Operators
    - 280 Grade II Wastewater Operators
    - 124 Grade I Wastewater Operators
    - 413 Grade IC Wastewater Operators

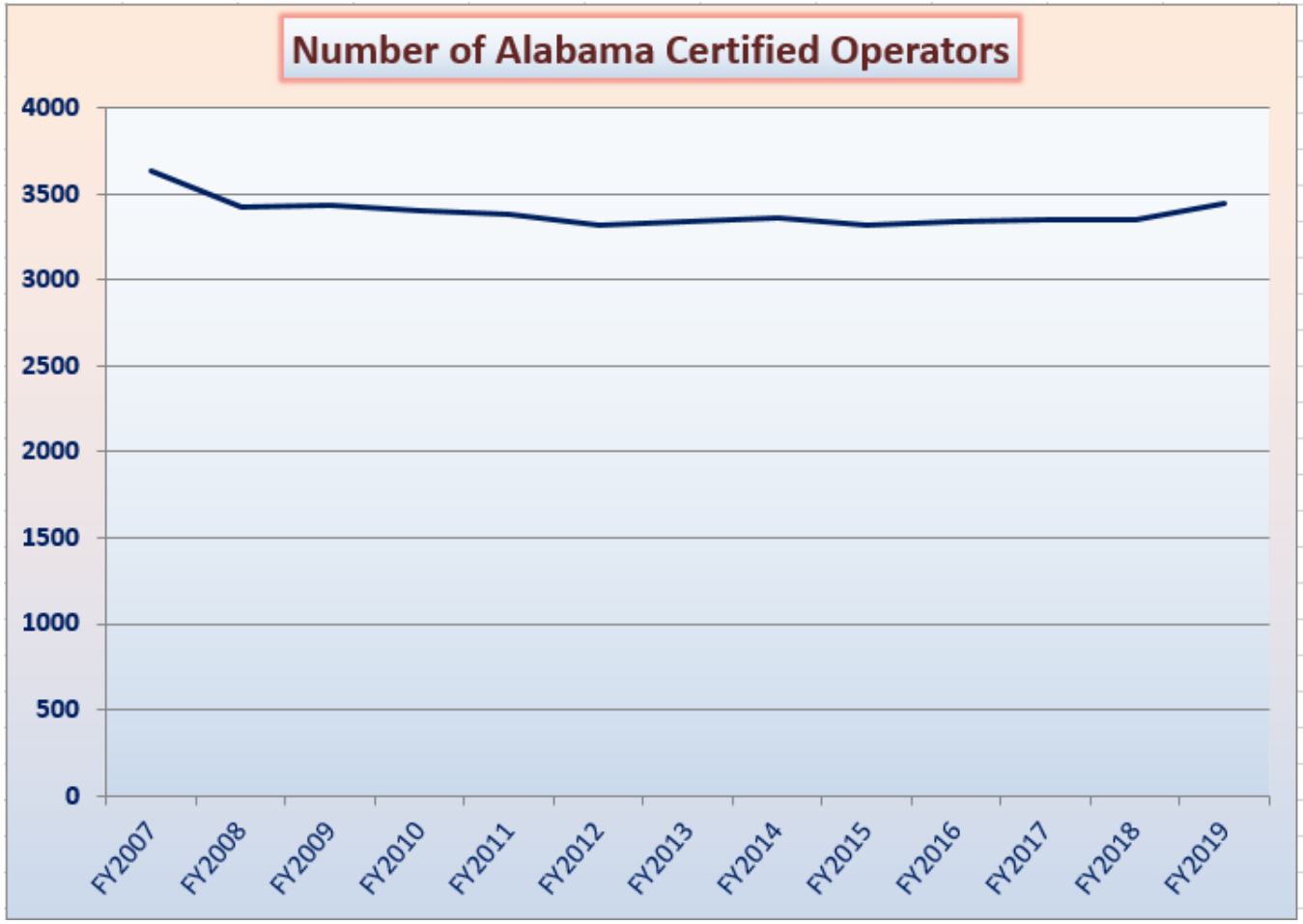
No. of Systems (482 Plants)

- ≈ 37 (IV)
- ≈ 77 (III)
- ≈ 208 (II)
- ≈ 160 (I)
- ≈ 510 (IC)

Operator Inventory (as of 9/8/19)

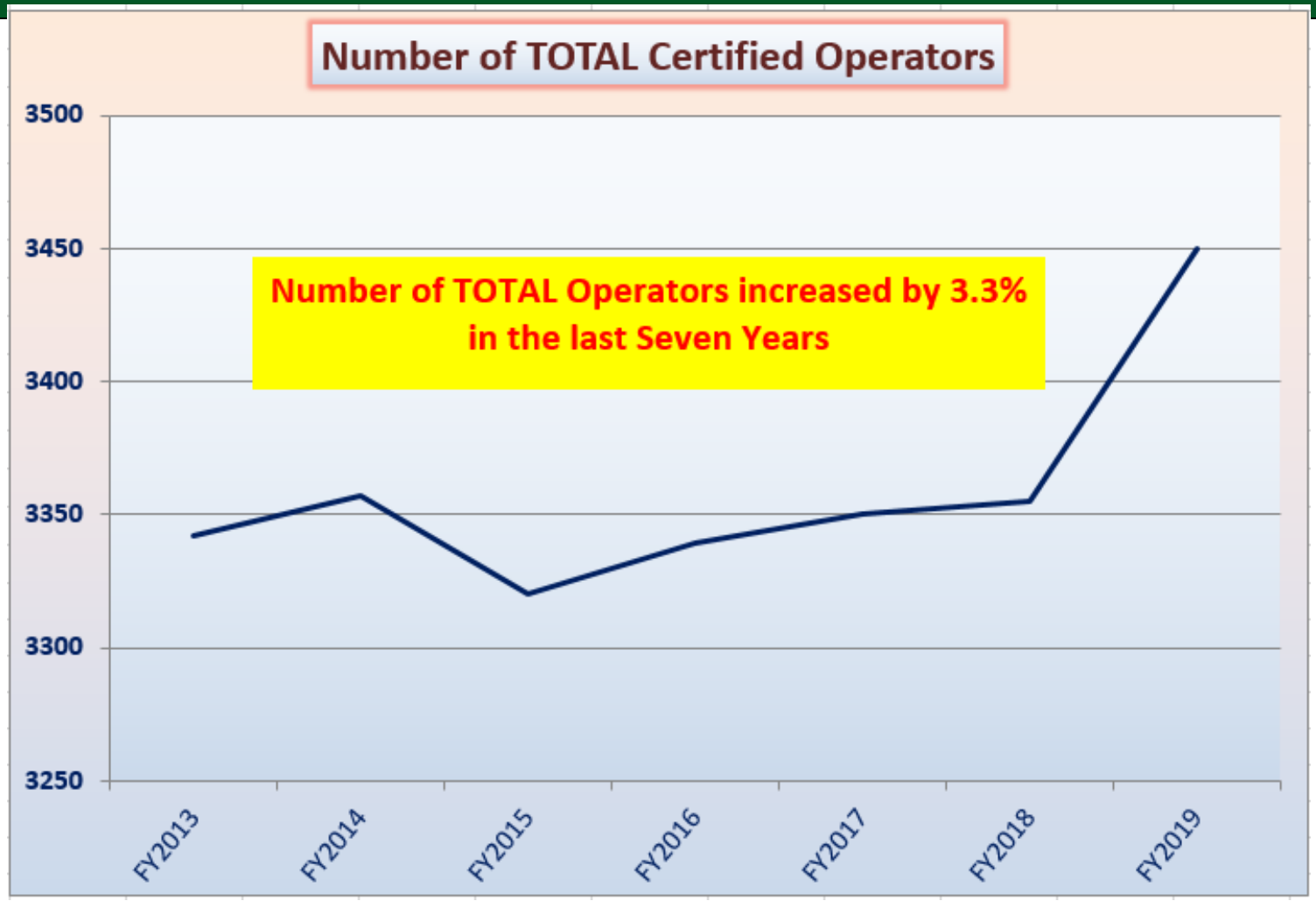
- We have 4108 Certifications issued
- There are 658 people dual certified
- Overall, we have 3450 people certified in Water and Wastewater programs

Our Workforce 12-YearTrend (No. of Operators)

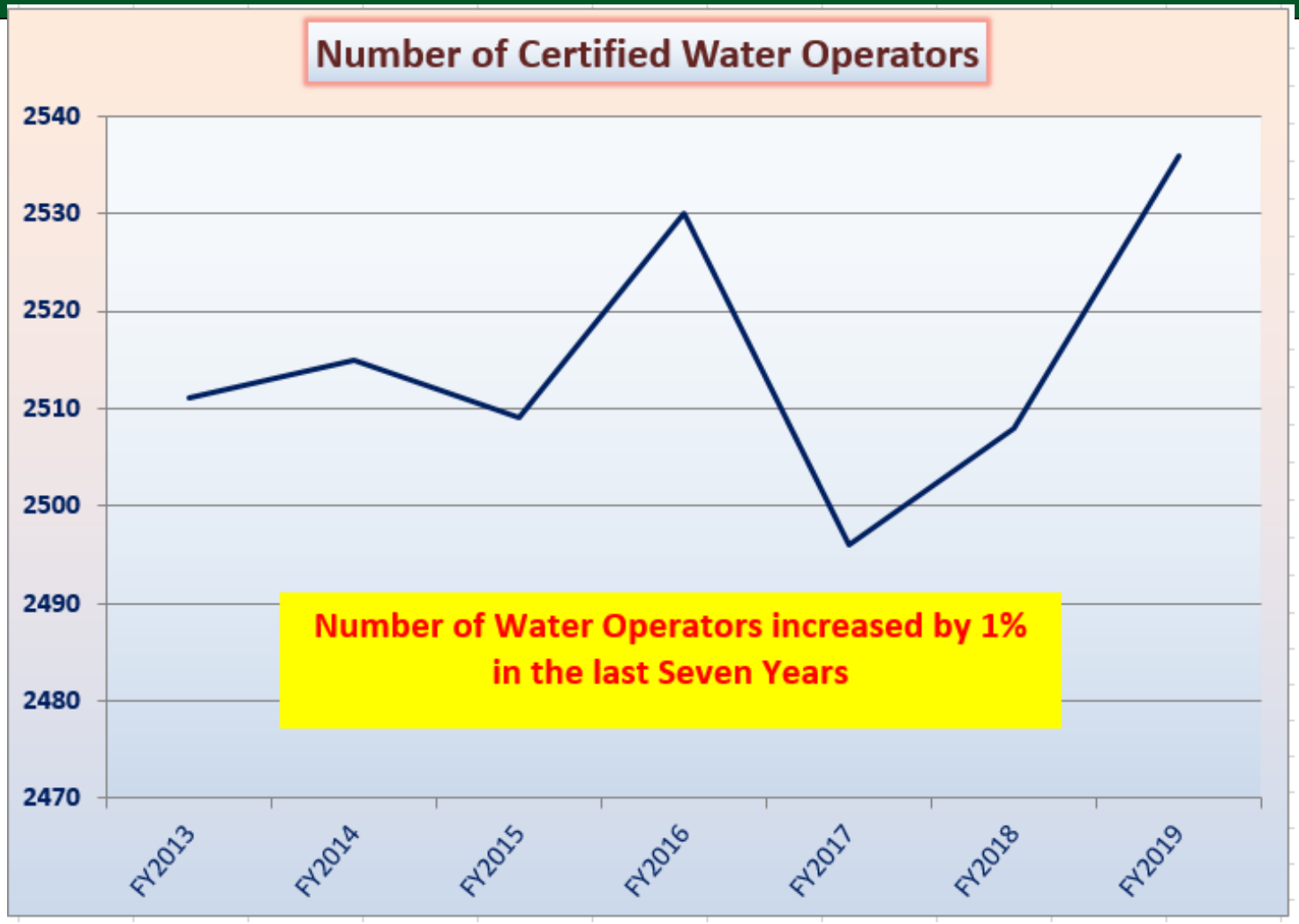


Our Workforce Trend (12-year No of Operators)

Our Workforce Trend (A closer year look)

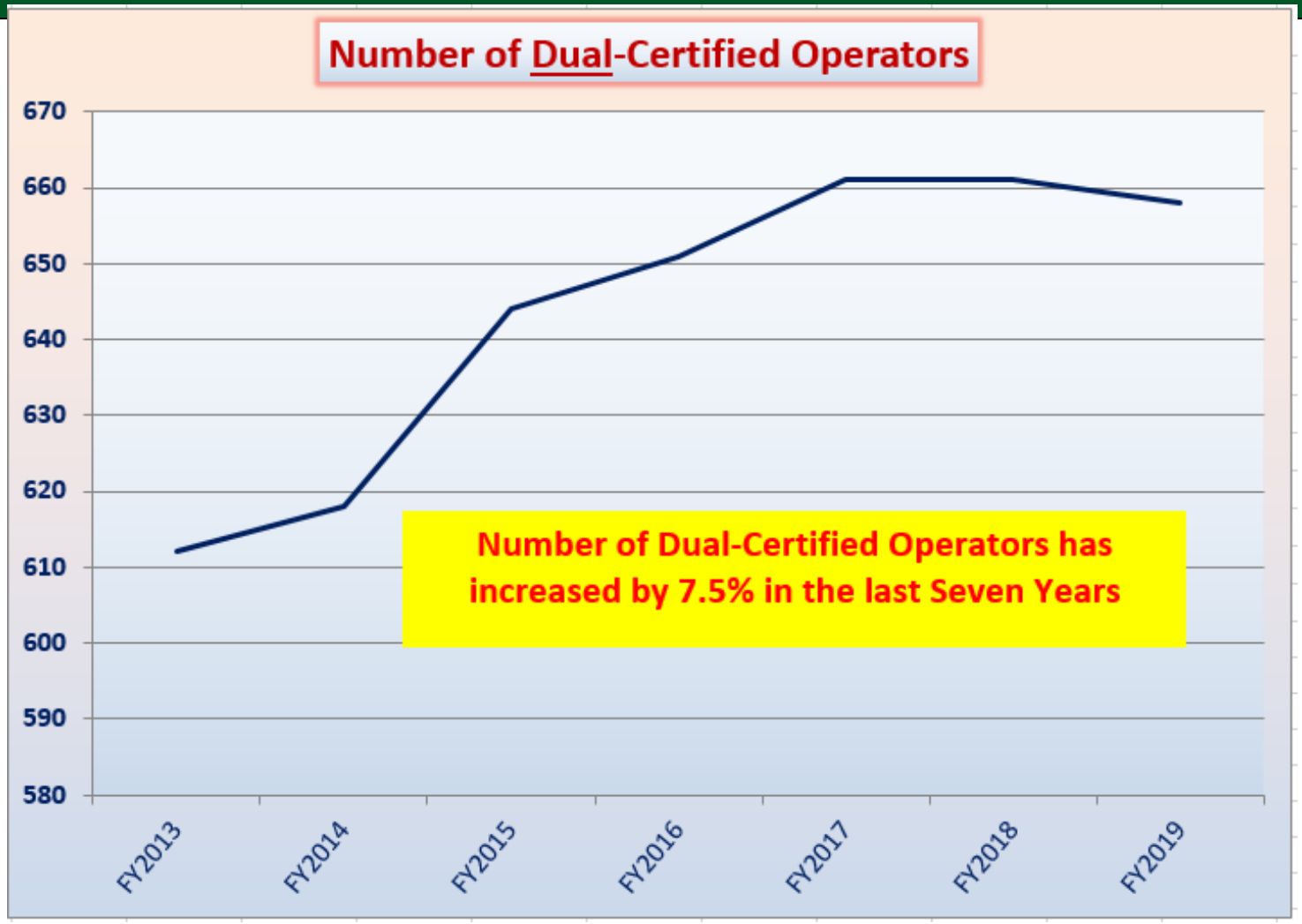


Our Workforce Trend (No. of Water Operators)

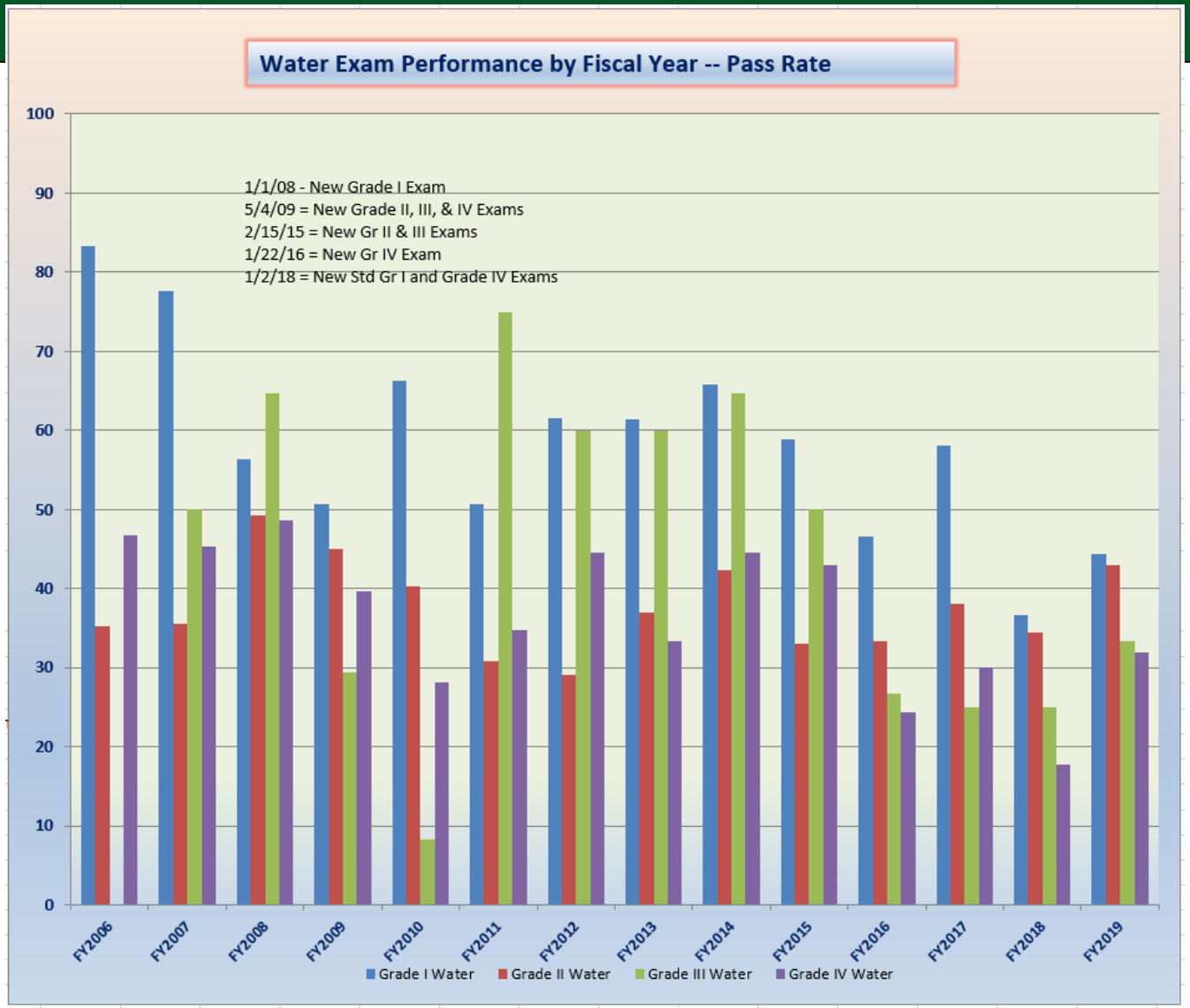


Our Workforce Trend (No. of Wastewater Operators)

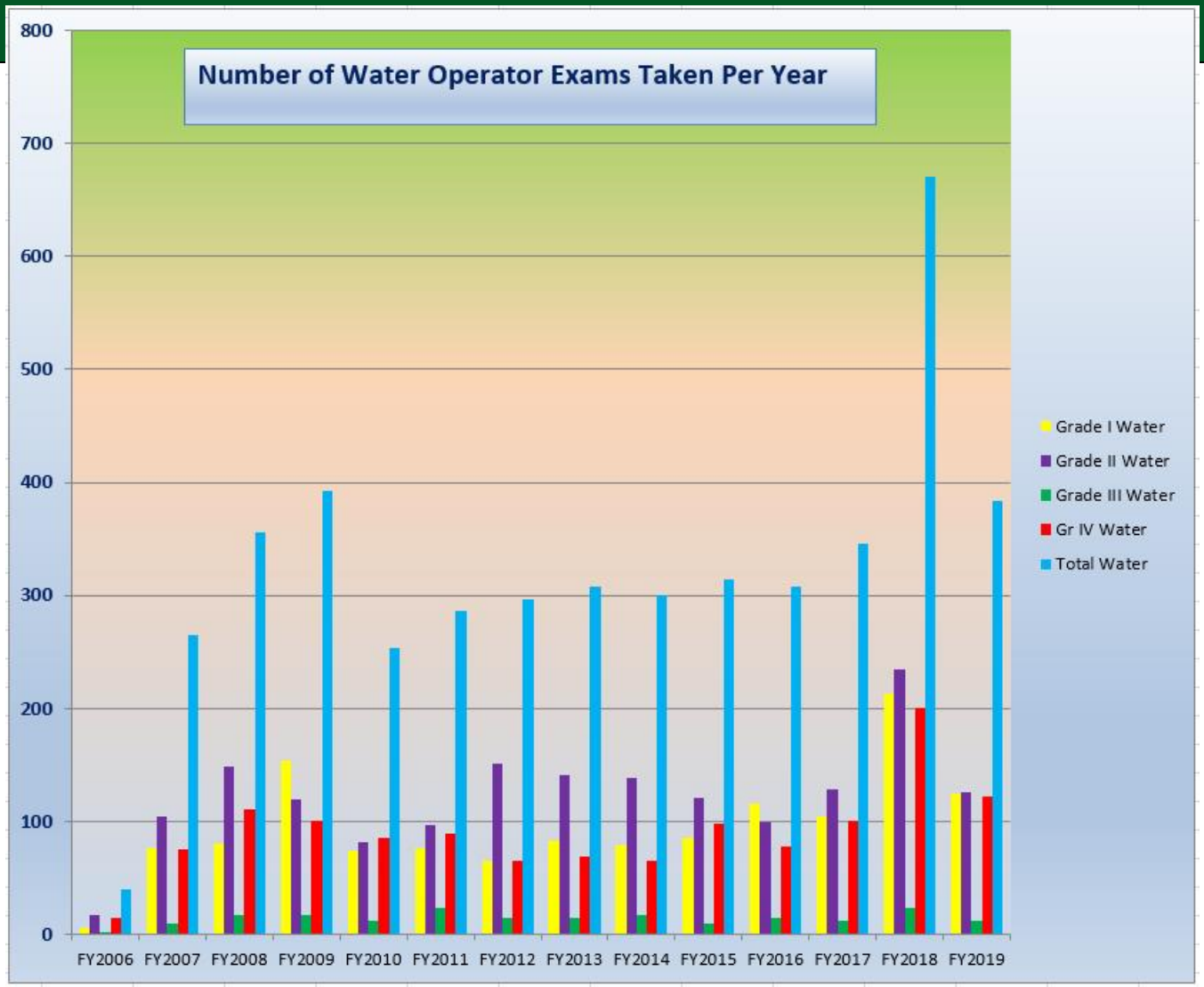
Our Workforce Trend
(No. of Dual-Certified Operators)



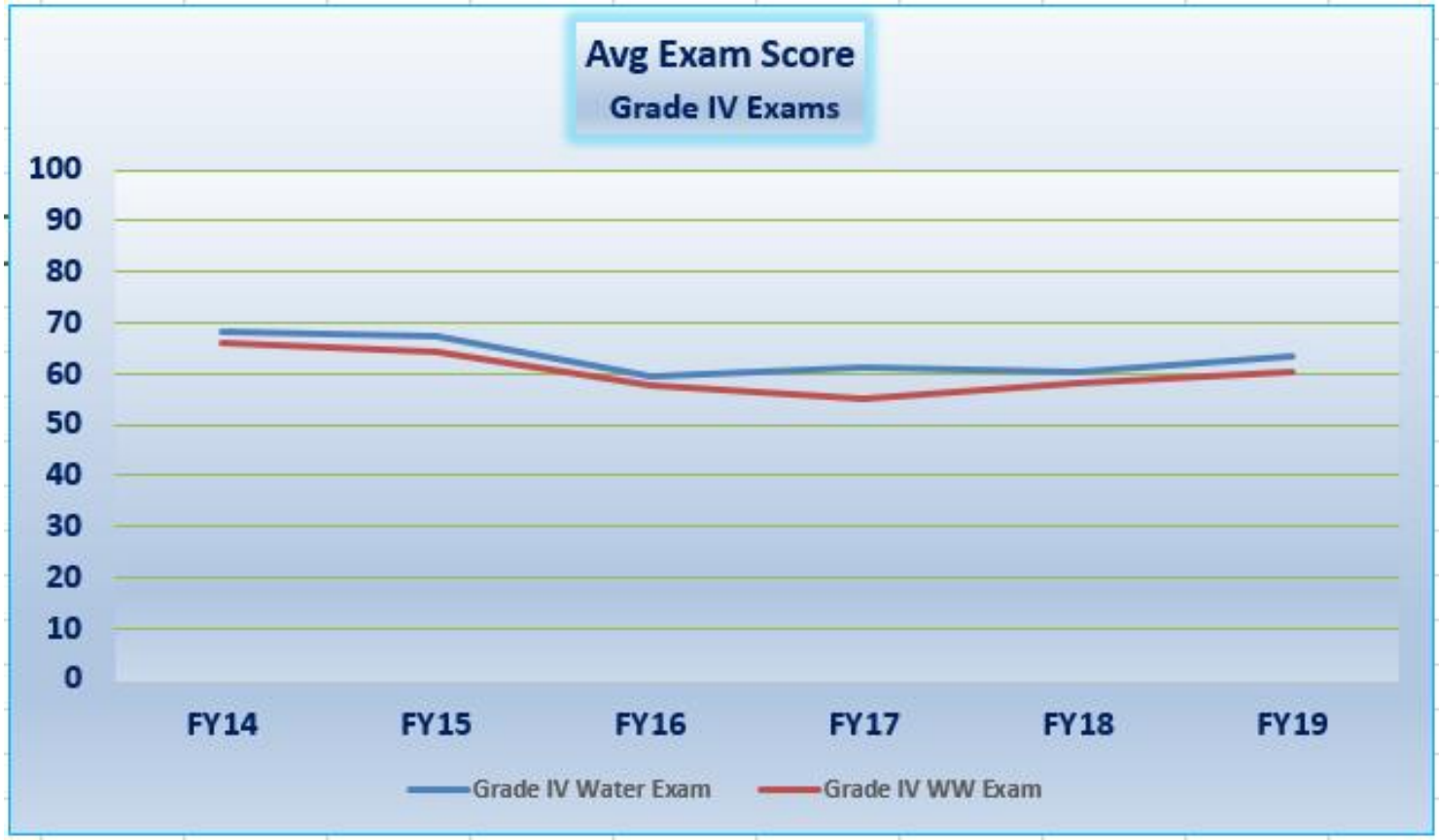
Water Exam Pass Rates
(as of 9/7/19)



Water Exams Taken
(as of 9/7/19)



Avg Grade IV Exam Score



Some Trends…

- We have a historically high number of people taking both Water and WW certification exams in the last two years (likely due to an increasing number of pending retirements)
- Very few people take the Grade I WW exam or the Grade III Water exam (in FY19: 13 and 12, respectively)
- Pass rates on BOTH Grade IV exams are rather low in FY19:
  - About 32% Water
  - About 18% Wastewater
- Many people are still complaining about the Grade IV pass rates overall

Some Trends…

- The FY19 pass rates are not historic lows
- Grade IV pass rates and exam scores have generally been declining in recent years
- We also have some people complaining about pass rates on EVERY exam (e.g., Grade II Water and WW, even though pass rates are about 40%)

Some Trends…

- We have many people striving to pass an exam they are not prepared to take

Example Grades

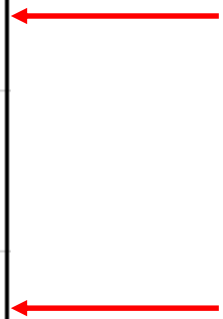
Name	# of Exams	Historical Exams
Person A	3	Grade IV WW 11/15/17 (52) Grade IV WW 12/4/18 (55) Grade IV WW 6/20/19 (66)
Person B	5	**Grade I Water 10/8/15 (73)** Grade IV Water 2/11/16 (49) Grade IV Water 6/30/16 (54) Grade IV Water 3/9/17 (59) Grade IV Water 5/2/19 (67)
Person C	3	Grade IV WW 4/17/17 (46) Grade IV WW 7/14/18 (53) Grade IV WW 4/9/19 (50)
Person D	4	Grade IV Water 2/12/16 (43) Grade IV WW 6/17/16 (45) Grade IV Water 10/27/17 (48) Grade IV Water 4/12/19 (64)
Person E	3	Grade IV WW 2/17/18 (53) Grade III WW 9/1/18 (67) **Grade III WW 10/3/18 (77)**
Person F	6	Grade I Water 6/11/12 (0) **Grade I Water 10/11/12 (78)** **Grade I WW 12/12/13 (77)** **Grade II WW 8/27/15 (76)** Grade IV Water 5/3/18 (54) Grade IV Water (5/9/19) 56
Person G	2	Grade IV WW 5/2/18 (47) Grade IV WW 5/8/19 (48)
Person H	5	Grade III WW 1/19/18 (55) Grade III WW 6/15/19 (58) Grade III WW 1/11/19 (67) Grade III WW 4/12/19 (67) **Grade III WW 7/3/19 (72)**
Person I	6	Grade III Water 7/1/03 (65) **Grade III Water 10/16/03 (80)** Grade III WW 3/14/16 (56) Grade III WW 5/9/17 (64) Grade III WW 2/12/18 (69) **Grade III WW 2/18/19 (76)**
Person J	6	Grade IV Water 11/7/17 (41) Grade IV Water 3/27/18 (45) Grade IV Water 10/19/18 (49) Grade IV Water 3/8/19 (58) Grade IV Water 4/11/19 (66) Grade IV Water 6/4/19 (65)

Example Grades

Person K	3	Grade III WW 5/25/18 (41) Grade III WW 8/3/18 (37) Grade III WW 3/22/19 (41)
Person L	6	Grade III Water 2/23/18 (50) Grade III Water 4/5/18 (40) Grade III Water 8/9/18 (53) Grade III Water 10/4/18 (43) Grade III Water 1/24/19 (53) Grade III Water 5/1/19 (47)
Person M	5	Grade I Water 12/10/13 (62) Grade I Water 9/11/14 (67) Grade I Water 4/27/15 (69) **Grade I Water 8/28/15 (72)** Grade II WW 5/15/19 (50)
Person N	4	Grade IV Water 7/20/18 (57) Grade IV Water 1/3/19 (55) Grade IV Water 3/18/19 (57) **Grade IV Water 5/1/19 (70)**
Person O	6	Grade IV WW 8/28/17 (52) Grade IV WW 3/19/18 (54) Grade IV WW 8/27/18 (59) Grade IV WW 1/7/19 (66) Grade IV WW 3/11/19 (57) Grade IV WW 5/10/19 (58)
Person P	11	Grade IV Water 8/26/17 (53) Grade IV Water 12/8/17 (48) Grade IV Water 4/28/18 (61) Grade IV Water 6/18/18 (60) Grade IV Water 9/1/18 (56) Grade IV Water 12/8/18 (60) Grade II WW appr 10/4/18 (never took it) Grade IV Water 2/2/19 (59) Grade IV Water 3/16/19 (0) **Grade IV Water 4/13/19 (72)** Grade II WW 5/11/19 (63)

Example Grades

Person Q	4	Grade II Water 3/6/17 (63) Grade II Water 6/12/17 (61) Grade II Water 7/23/18 (61) Grade II Water 5/28/19 (57)
Person R	4	Grade I Water 3/26/18 (48) Grade I Water 3/18/19 (64) Grade I Water 4/16/19 (68) **Grade I Water 5/3/19 (71)**
Person S	3	Grade IV WW 11/6/17 (36) Grade III WW 3/29/19 (48) Grade III WW 4/27/19 (52)



Example Grades

God bless their tenacity..!!

They don't give up, they are learning their trade, and getting it done..!!

Name	# exams Taken	Historical Exams
Person T	21	Grade III WW 8/21/13 (43) Grade III WW 1/24/14 (41) Grade II WW 3/20/14 (67) Grade II WW 7/28/14 (65) **Grade III WW 12/15/14 (77)** Grade IV Water 2/9/15 (53) Grade IV WW 3/6/15 (60) Grade IV WW 8/13/15 (63) Grade IV Water 4/21/16 (37) Grade IV Water 10/14/16 (45) Grade IV Water 1/10/17 (47) Grade IV Water 3/21/17 (51) Grade IV Water 4/7/17 (56) Grade IV Water 5/5/17 (65) Grade IV Water 5/23/17 (64) Grade IV Water 6/9/17 (61) Grade IV Water 6/20/17 (65) **Grade IV Water 7/17/17 (70)** Grade IV WW 5/10/18 (45) Grade IV WW 5/20/19 (46) Grade IV WW 7/1/19 (54)
Person U	18	Grade III WW 10/4/01 (45) Grade III WW 8/13/02 (54) Grade III WW 8/13/02 (??) Grade III WW 3/4/03 (53) Grade III WW 10/16/03 (59) **Grade I WW 3/16/04 (71)** Grade III WW ??/??/?? (59) Grade II WW 6/10/04 (62) Grade II WW 11/16/06 (53) Grade IV WW 12/5/07 (58) Grade IV WW 3/10/08 (58) Grade III WW 7/6/09 (54) Grade III WW 12/30/09 (64) Grade II WW 12/7/11 (57) Grade I WW 8/6/14 (69) Grade II WW 12/9/14 (63) Grade II WW 9/23/16 (68)

Based on exam performance…

- The exam process works well
- It is a distinguishing factor in developing, identifying and ultimately certifying talented operators
- Certification at ANY level is quite an accomplishment
- Higher certification is very notable

The "State" of Certification

Federal regulation and oversight is changing. What we have done in the past is no longer considered acceptable.

- The 'validity' of exams is an issue
- The development of exams undergoes a much more rigorous and prescriptive process
- It's no longer acceptable to just put together a local committee of knowledgeable 'experts' to develop Alabama exams
- EPA is looking at state OC programs more closely (pass rates, classification, enforcement, etc.)

Future Regulation Change

ADEM is developing a major Operator Certification regulation change:

- The existing plant classification process is over-simplified and somewhat arbitrary
  - 4.99 MGD WWTP is a grade III plant
  - 5.00 MGD WWTP is a grade IV plant
  - Basic GWT = grade II; Adv GWT = grade III
  - All surface water plants are grade IV WTPs
  - Most membrane plants are grade III or IV WTPs, but also have grade II

Future Regulation Change

ADEM is developing a major Operator Certification regulation change:

- All exams will be standardized exams
- All plants will undergo a numerical ranking process to better define plant classification
- Some plant grades will change. Most will stay the same. Some will go up and some will go down

Future Regulation Change

Some other significant changes:

- A candidate will have to pass a grade II exam prior to taking a grade III or IV exam
- Distribution and Collection systems will also undergo a classification process.

Grade ID
Grade IID
Grade IIID
Grade IVD

Maybe

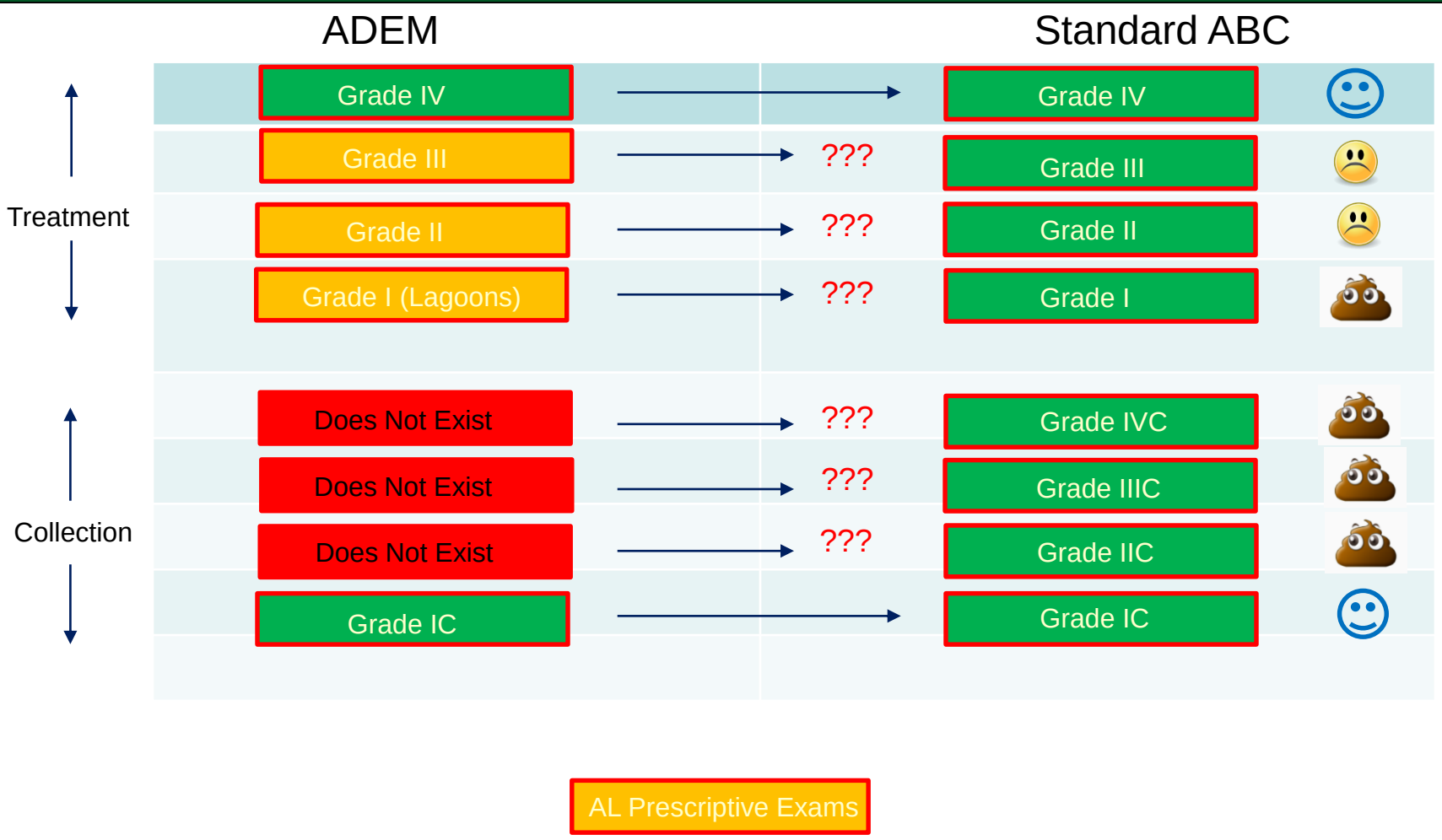
Grade IC
Grade IIC
Grade IIIC
Grade IVC

Maybe

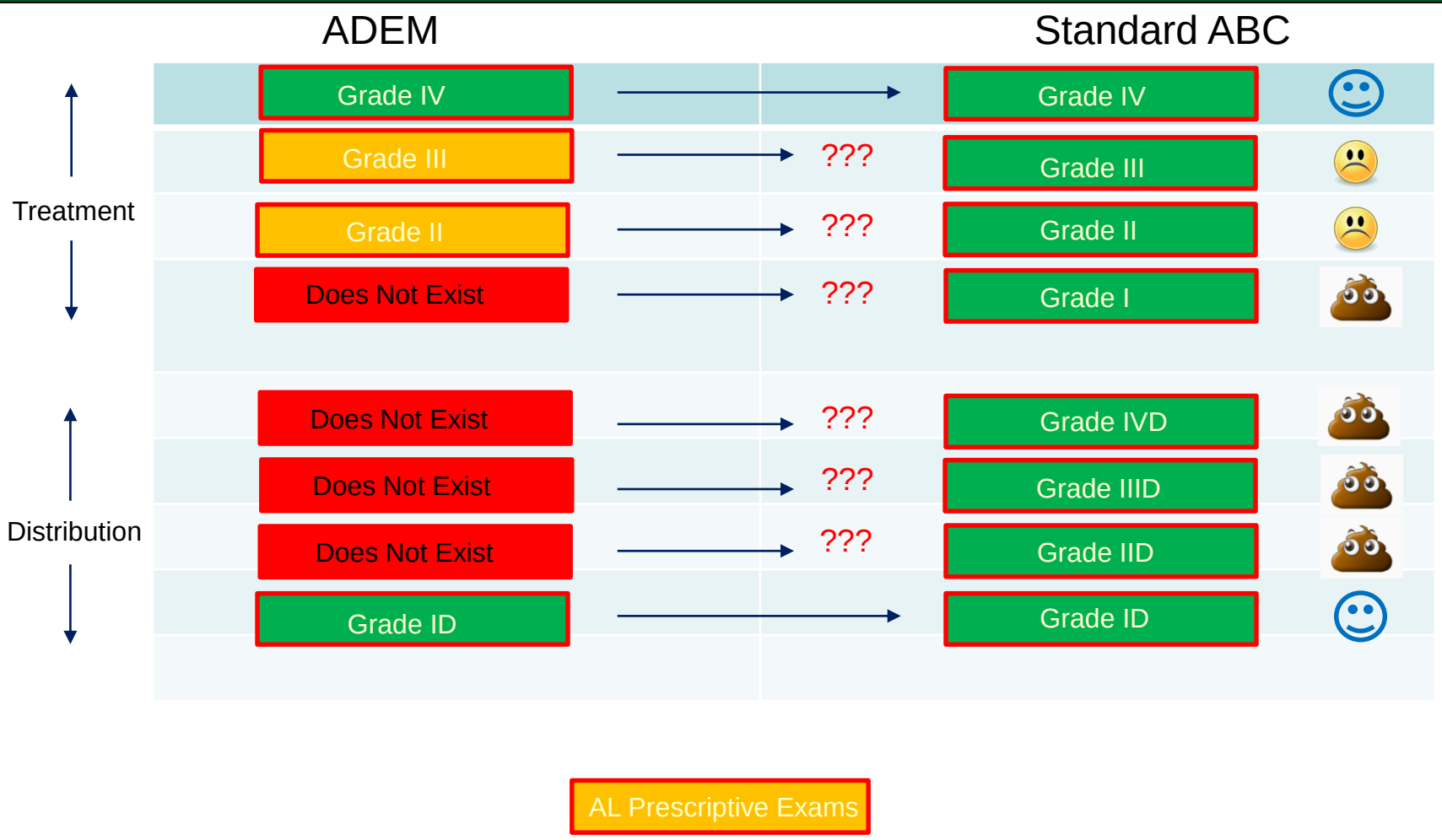
Future Regulation Change

- It will be the most significant change in ADEM's OC history since the inception of the original rule
- We are now drafting and developing the revised regulation
- We will have a number of public forums to discuss the draft regulation
- It will go to public notice (mid 2020)

Present WW Classification Matrix



Present Water Classification Matrix



Presently…

- We are far removed from the national standard exams

We need to comply with standardization or approach it more closely

How far do we want to go?

- Fully Comply with Standardization?

Or

- Get a little closer to Standardization?

Or

- Get much closer to Standardization?

Proposed Ranking Process - Water

- New ranking process intended to be simple and streamlined
  - Numerical ranking with 4 grades of Treatment
  - Only a few minutes to complete

Proposed Ranking Process - Water

- Based on:
  - Flow
  - Water source & variation of raw water
  - Unit processes in the system
  - Plant automation
  - Residuals disposal

Proposed Ranking Process - Water

- Distribution based on population
  - Grade ID = 1,500 or less
  - Grade IID = 1,501 to 15,000
  - Grade IIID = 1,501 to 50,000
  - Grade IVD = 50,001 and greater
- Adding Grade I Treatment
- Adding Grade ID and IID
- Maybe adding grade IIID and IVD

Proposed Ranking Process - Water

- All exams will be the standardized ABC exams

- Grade will be based on number of points
  - Grade I = 30 points or less
  - Grade II = 31 to 55 points
  - Grade III = 56 to 75 points
  - Grade IV = 76 points and greater

Proposed Ranking Process - Water

- The following ranking slightly altered from the ABC ranking
- Sample ranking for Attalla Water Treatment Plant (Currently Grade IV)
- Size based on design flow: (2.16 MGD)

Size (1 point minimum to 20 point maximum)		
Design flow average day, or peak month's average day, whichever is larger (1 point per 0.5 MDG. Round up.) Design flow: Consider this to be the design capacity of the plant. Examples: 9.2 MGD = 19 points; 4.7 MGD = 10 points	1 - 20	5

Proposed Ranking Process - Water

Water Supply Sources (Rating based on public health significance)		
Seawater/saltwater	0	
Groundwater	0	
Groundwater under direct influence of surface water (GWI)	8	8
Surface water	10	
Average Raw Water Quality Variation **(0 to 10 point maximum)**. Applies to all sources (surface and groundwater). Key is the effect on treatment process changes that would be necessary to achieve optimized performance. - Little or no variation - no treatment provided except disinfection (0 points) - Minor variation - e.g. "high quality" surface source appropriate for slow sand filtration (1 point) - Moderate variation in chemical feed, dosage changes made: monthly (2 points), weekly (3 points), or daily (4 points) - Variation significant enough to require pronounced and/or very frequent changes (5 points) - Severe variation - source subject to non-point discharges, agricultural/urban storm runoff, flooding (7 points) - Raw water quality subject to agricultural or municipal waste point source discharges (8 points) - Raw water quality subject to industrial waste pollution (10 points)	0-10	0
Raw water quality is subject to:		
- Taste and/or odor for which treatment process adjustments are routinely made [1]	2	
- Color > 15 CU (not due to precipitated metals) ***- see exceptions in Note 1 at end of table*** [1]	3	
- Iron or/and manganese > MCL: Fe (2 points), Mn (3 points) (3 points maximum allowed) ***- see exceptions in Note 1 at end of table*** [1]	2-3	3
- Algal growths for which treatment process adjustments are routinely made [1]	3	

Proposed Ranking Process - Water

Chemical Treatment/Addition Processes		
Fluoridation	4	
Disinfection/Oxidation (Note: Points are additive to a **maximum of 15 points** allowed for this category.) CHECK ALL THAT APPLY: -Chlorination: ' -Hypochlorites ..... (5 points) ' -If generated on site ..... (1 point) ' -Chlorine gas ..... (8 points) ' -Chloramination ..... (10 points) ' -Chlorine dioxide ..... (10 points) -Ozonation ..... (10 points) -UV Radiation ..... (2 points) -Iodine, Peroxide, or similar ..... (5 points) -Potassium permanganate (without greensand filtration) ..... (4 points)	0-15	8
pH adjustment for process control (e.g. pH adjustment aids coagulation)	4	
Stability or Corrosion Control (If the same chemical is used for both Corrosion Control and pH adjustment, count points only once)	4	
Coagulation/Flocculation & Filter Aid		
Primary coagulant addition	6	
Coagulant aid / Flocculant chemical addition (in addition to primary coagulant use)	2	
Flocculation	2	
Filter aid addition (Non-ionic/anionic polymers)	2	
Clarification/Sedimentation		
Sedimentation (plain, tube, plate)	4	
Contact adsorption	6	
Other clarification processes (air flotation, ballasted clarification, etc.)	6	
Upflow clarification ("sludge blanket clarifier")[2]	8	

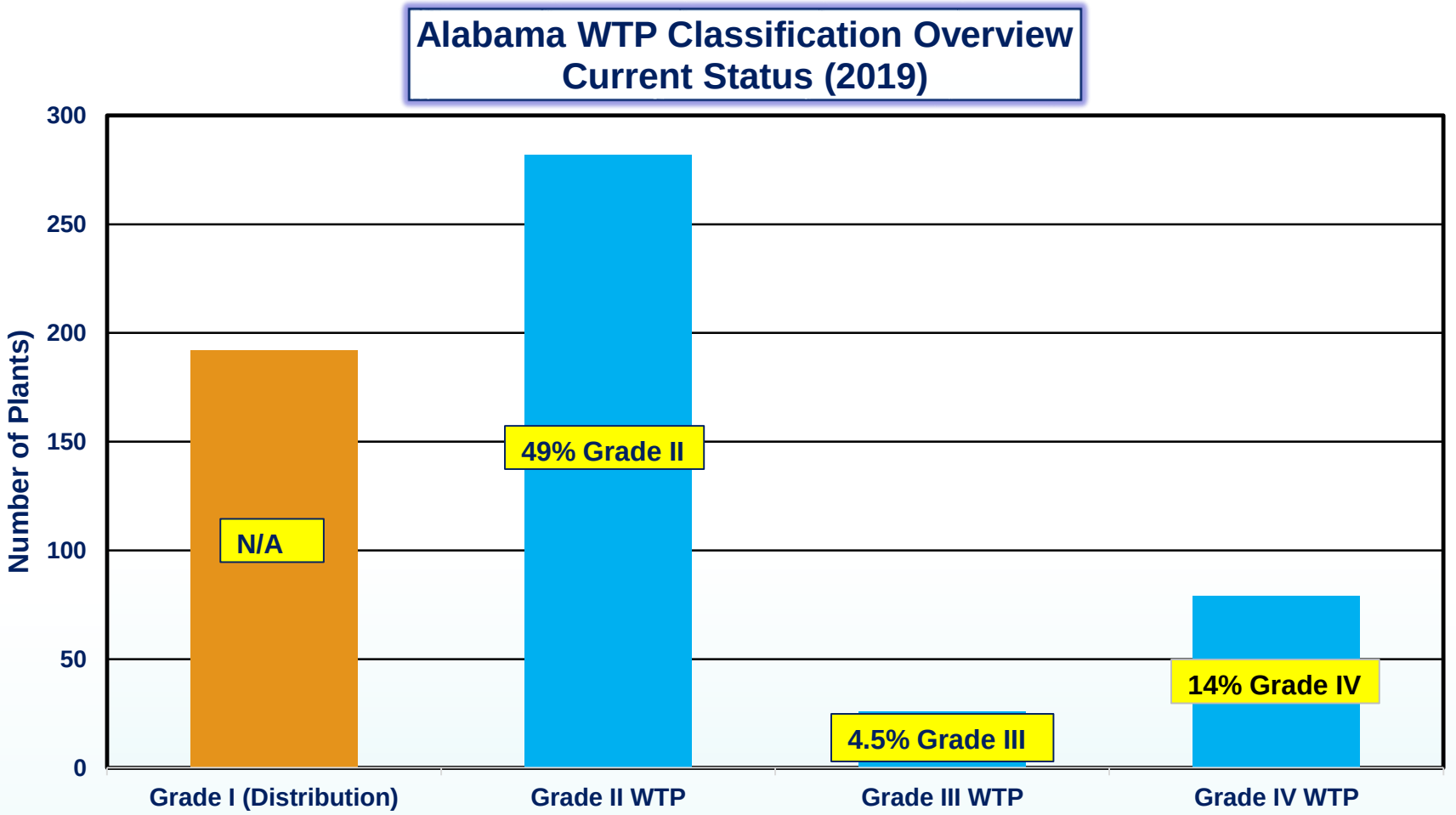
Proposed Ranking Process - Water

Filtration		
Granular media filtration (Surface water/GWI) ≤ 3 gpm/sq ft	10	10
Granular media filtration (Surface water/GWI) > 3 gpm/sq ft	20	
Groundwater filtration	6	
Membrane filtration - For compliance with a primary regulation (10 points) - For compliance with a secondary regulation (6 points)	6-10	10
Diatomaceous earth (pre-coat filtration)	10	
Cartridge/bag	5	
Pre-filtration (staged cartridges, pressure sand w/o coagulation, etc.): add one point per stage to maximum of 3 points	1-3	
Slow sand	5	
Other Treatment Processes		
Aeration	3	
Air stripping (including diffused air, packed tower aeration)	5	
Ion-exchange/softening	5	
Greensand filtration	10	
Backwashable multi-media pre-filtration	8	8
Lime-soda ash softening (includes: chemical addition, mixing/flocculation/clarification/filtration - do not add points for these processes separately)	20	
Granular activated carbon filter (do not assign points when included as a bed layer in another filter)	5	
Powdered activated carbon	2	
Blending sources with significantley different water quality - To achieve MCL compliance (4 points) - For aesthetic reasons (2 points)	2-4	
Reservoir management employing chemical addition	2	
Electrodialysis	15	

Proposed Ranking Process - Water

Residuals Disposal		
- Discharge to surface, sewer, or equivalent (0 points) - On-site disposal, land application (1 point) - Discharge to lagoon/drying bed, with no recovery/recycling - e.g. downstream outfall (1 point) - Backwash recovery/recycling: discharge to basin or lagoon and then to source (2 points) - Backwash recovery/recycling: discharge to basin or lagoon and then to plant intake (3 points)	0-3	1
Facility Characteristics		
Instrumentation - Use of SCADA or similar instrumentation systems to provide data, with: - Monitoring/alarm only, no process operation - plant has no automated shutdown capability (0 points) - Limited process operation - e.g. remote shutdown capability (1 point) - Moderate process operation - alarms and shutdown, plus partial remote operation of plant (2 points) - Extensive or total process operation - alarms and shutdown, full remote operation of plant possible (4 points)	0-4	4
Points based on 335-10-x-.xx		57.0
Classification based on 335-10-x-.xx		**Grade III**

Current Status of WTP Classifications



Future Status of WTP Classifications

- We envision the classification of plants being more broadly distributed

Proposed WTP numerical rankings

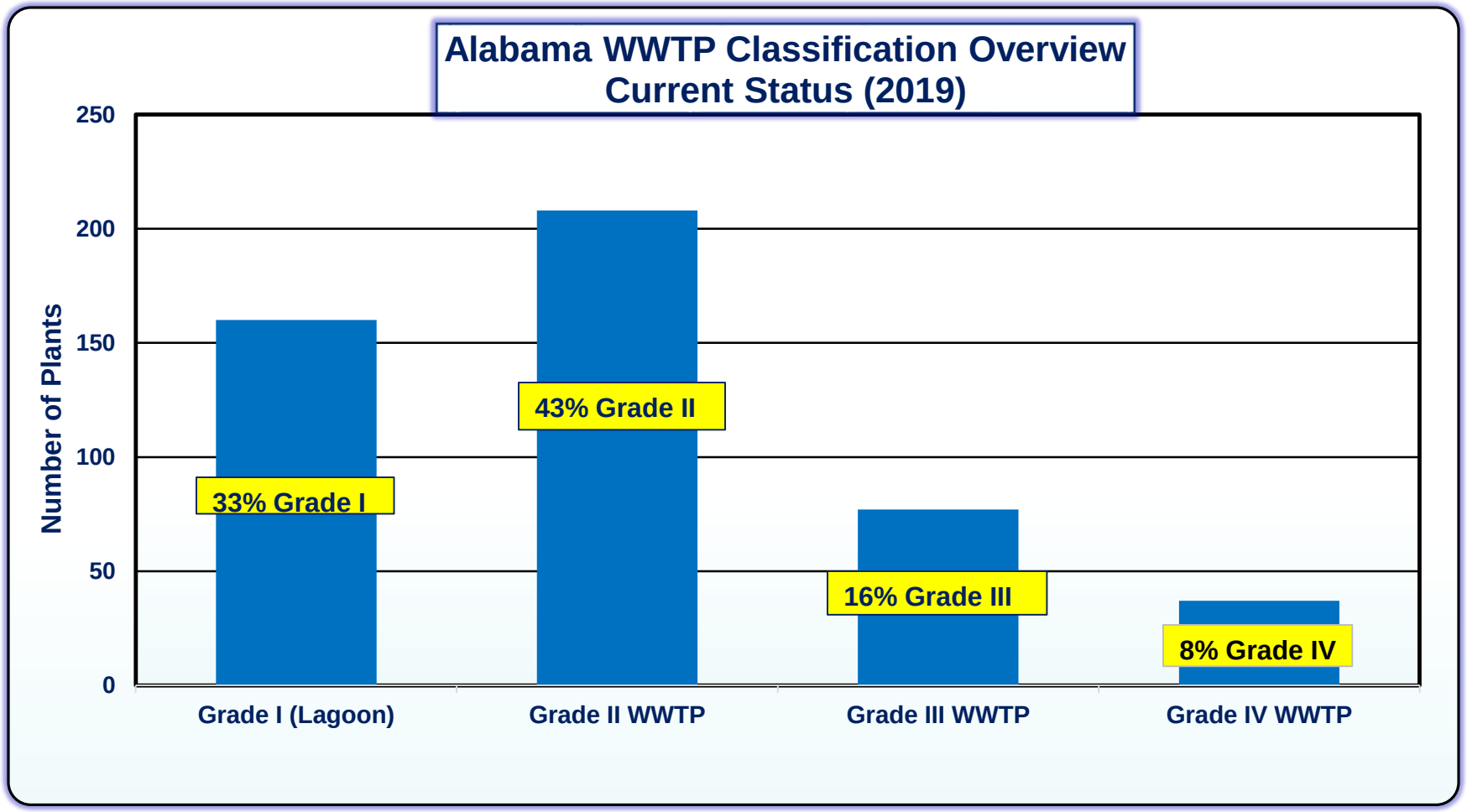
- These plants were not randomly chosen
- Something unique about these plants
  - Thought they would be likely to change grades

Plant	Current Ranking	Proposed Ranking
Alabaster (plant #1)	IV	III
Alabaster (plant #2)	II	II
Attalla	IV	III
Clay County	IV	IV
West Barbour	II	I

Proposed Ranking Process - Wastewater

- Based on:
  - Population
  - Flow
  - I&I Impacts
  - Industrial sources present
  - Unit processes in the system
  - Treatment limits
  - Plant automation
  - Laboratory analysis accomplished
  - Biosolids processes

Current Status of WWTP Classifications



Future Status of WWTP Classifications

- We also envision the classification of wastewater plants being more broadly distributed

- On-Site WWTPs may also be adopted into the WW Certification Program

Proposed WWTP numerical rankings

	Plant	Current Ranking	Proposed Ranking
*	Attalla	I	II
	Brantley Lagoon	I	I
	Centre Lagoon	I	I
*	Daphne	III	IV
	East Walker	II	II
*	Eufaula	III	II
*	Hoover Inverness	III	IV
	Littleville	II	II
	Maplesville	II	II
	Muscle Shoals	III	III
*	Prattville Pine Creek	III	IV
	Valley Junior High School	II	II

How will this affect our current operators?

It should not:

- We will implement a major grandfathering clause for operators working at a plant that increases in grade

How will this affect our current operators?

For example, if you work at a Grade III plant and the plant is deemed a Grade IV plant:

- All current Grade III operators at the plant will also be given a “Restricted’ Grade IV Certification

What about existing Grade III WW Plant Waivers?

If a plant is upgraded to a Grade IV WW plant, the waiver will remain in place

- Proposing that all Grade III and also Grade IV Plants with a flow of up to 4.99 MGD may pursue a waiver

All Operators will be required…

- To notify ADEM's Operator Certification Program about where the operator is employed & when employment changes

- Multiple System Form must be submitted to ADEM's OC Program by all operators working at more than one plant (Actually, we envision using one form for all operator employment notifications)

Multiple Systems Operators

- Operator must obtain approval to operate each and every system the person claims to operate
- Operator will be responsible for ensuring the safe, effective, and proper operation of all plants and systems operated
- Plants to be operated must be within a 50-Mile radius of the operator's primary residence

Adopting a new requirement for operator in "Direct Responsible Charge"

Primarily for Operator Interns

- The plant must designate that an Intern is in DRC of a plant or of a major component of a plant and that he/she is working under the direct supervision of a certified operator of the same grade or higher than the grade pursued by the intern

Collection & Distribution System Operators

- Every public wastewater collection and water distribution system must have a certified operator in responsible charge of the collection and distribution systems

- In most cases, this should be someone who is NOT working as the treatment system operator

Work Shift Limit

- The same operator may not work a shift greater than 16-hours per day without prior written approval from the Director

- Short-term exceptions may be granted during weather emergencies, power outages, or plant upset

Test taking restriction

- Upon failure of three-consecutive exams for the same grade within a six-month period, the applicant must wait 6-months before applying to take a repeat exam

Certificate Expiration

- Late fees are still applicable if a certificate is not renewed 30-days prior to expiration
- Presently, if an Operator did not attain his or her CEHs prior to the expiration date, the operator's certification is lost
- We are changing this requirement to allow an operator a sunset period of one-year to attain re-certification

Certificate Expiration

- Incremental late fees will be issued:
  - Basic late fee ($215)
  - 6-month late period (TBD but higher $$)
  - 24-month late period (TBD but incrementally higher $$)
- Operator remains uncertified during this lapse period

Reciprocity

- Only granted if the operator passes a comparable written exam in a reciprocal state [i.e., no ‘reciprocity of a reciprocity’]

- We WILL consider accepting reciprocity with states that presently do not offer reciprocity with Alabama (e.g., Florida, California)

Training Class CEH Allocations

- Some specificity will be added to clarify the type and number of CEHs accepted in a given 3-year renewal period

Revocation of Certificate

- Adding a provision for revocation if an operator falsifies documented work experience or time worked in Direct Responsible Charge

On-Line Renewal

- Will be required

(i.e., mail-in renewals will not be accepted)

Automated Renewal

Though not part of the regulation, ADEM will be launching an automated renewal process sometime in the future (possibly 2021)

- An Operator will renew on-line and be issued a renewal card that he or she will be responsible for printing out

Automated Renewal

This is a ‘trust but verify’ process

- ADEM’s Operator Certification Program will do more random audits of renewals once this automated renewal program is implemented:
- The operator should keep detailed records of training activities, in the event he/she is audited

All Forms will be revised

- Form 435 Operator Renewal (on-line)
- Form 505 (exam application)
- Form 506 (Operator Experience Verification)
- Form 507 (Reciprocal Application)
- Form 508 (Multiple Systems Application – will be revised to be a required “Operator Employment Form”)

Plant Ranking Sheet

- Will be placed on the Operator Certification Web Page
- Plant management/chief operator will be required to complete the ranking for each plant one time
- Plant must revise the ranking in the future, if plant changes occur that warrant re-ranking

Plant Re-ranking

- Should rarely occur
- Plant management/chief operator will be required to re-rank the plant when necessary
- ADEM will implement a grandfathering of plant operators at the time of re-ranking, if necessary

Questions..?

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